Amendment to the Claims:

This listing of claims replaces all prior versions, and listings, of claims in the application:

1. (Previously Presented) A displacement transducer comprising: first and second non-ferromagnetic coil forms with a common axis, each of said first and second coil forms wound with at least one winding;

an outside diameter of the first form and said at least one winding being smaller than an inside diameter of the second form so that said first and second forms may be displaced relative to each other with the first form inside the second form, one of the coil forms being movable and the other coil form being stationary;

the at least one winding on the movable form magnetically coupled to the at least one winding on the stationary form in the absence of any ferromagnetic element inductively coupling the windings; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less and having an RMS noise representing less than 2.1 nm of movement between the coils.

2. (Original) The transducer of claim 1, in which the sensor comprises;

the coil form with the smaller outside diameter wound with two or more windings and the other coil form wound with a single winding.

3. (Original) The transducer of claim 1, in which the sensor comprises;

the coil form with the larger inside diameter wound with two or more windings and the other coil form wound with a single winding.

4-60 (Canceled)

61. (Cancelled)

62. (Currently Amended) A transducer as in claim 1, wherein said first coil ~~forms~~ form and said second core ~~forms~~ form collectively are means for reducing Barkhausen noise in the displacement transducer.

63. (Previously Presented) A transducer as in claim 1, wherein said electronic circuitry generates a signal

having an RMS noise which produces a positional inaccuracy of less than 1.9 nm.

64. (Previously Presented) A displacement transducer comprising:

first and second non-ferromagnetic coil forms made of non-ferromagnetic material with a common axis, each of said first and second coil forms wound with at least one winding;

an outside diameter of the first coil form and said at least one winding being smaller than an inside diameter of the second coil form so that said first and second coil forms may be displaced relative to each other with the first coil form inside the second coil form, and with one of the coil forms being movable and the other coil form being stationary;

the at least one winding on the movable form magnetically coupled to the at least one winding on the stationary form in the absence of any ferromagnetic element inductively coupling the windings; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less.

65. (Currently Amended) A transducer as in claim 64, wherein said electronic circuitry generates ~~a~~ said signal having an RMS noise which produces a positional inaccuracy of less than 2.1 nm.

66. (Previously Presented) A transducer as in claim 64, wherein said coil forms and said core forms collectively means for reducing Barkhausen noise in the displacement transducer.

67. (Currently Amended) A displacement transducer comprising:

first and second non-ferromagnetic coil forms with a common axis, each of said first and second coil forms wound with at least one winding;

an outside diameter of the first coil form and its at least one winding being smaller than an inside diameter of the second coil form so that said first and second coil forms may be displaced relative to each other with the first coil form inside the second coil form, and with one of the coil forms being movable and the other coil form being stationary;

said first coil forms and said second coil core forms including means for reducing Barkhausen noise when the

first and second coil forms move relative to each other; and

electronic circuitry generating a signal responsive to relative displacements between the coil forms in the range of microns or less and having reduced Barkhausen noise effect.

68. (Currently Amended) A transducer as in claim 67, wherein said electronic circuitry generates ~~a~~ said signal having an RMS noise which produces a positional inaccuracy of less than 2.1 nm.

69. (Previously Presented) A method of operating a displacement transducer, comprising:

forming first and second non-ferromagnetic coil forms which each have at least one winding, and are wound with a common axis, with one of coil forms being inside the other;

allowing one of said coil forms to move relative to the other;

reducing an effect of Barkhausen noise on the coil forms as they move; and

generating an output signal responsive to relative displacements between the coil forms, which output signal

has an RMS noise that forms a positional inaccuracy of 2.1 nm or less.